Fatigue Risk Management

Ries Simons, M.D.

TNO Aerospace Medicine

Discussion Paper presented at ECAM2-Athens 2010

Effects fatigue / sleep loss

- Pre-occupation with one task, often a side-issue
- Impaired alertness

- Non-recognition of dangerous situation
- Missing of alarm signals
- Choosing risky options

- Neglect normal checks and procedures
- Not aware of impaired task performance
- Rapid irritation - bad team work

SUBPART Q

FLIGHT AND DUTY TIME LIMITATIONS AND REST REQUIREMENTS

OPS 1.1090

Into effect 1 July 2008

After >10 yrs of discussion:

18 'White Spots' remained

MOEBUS AVIATION

ecass

Final Report

Scientific and Medical Evaluation

of Flight Time Limitations"

	Name	Organisation, Country
1	Dr. Barbara Stone	QinetiQ, UK
2	Dr. Karen Robertson	QinetiQ, UK
3	Dr. Alexander Gundel	DLR, Germany
4	Mr. Martin Vejvoda	DLR, Germany
5	Dr. Mick Spencer	Human Factor Investigation, UK
6	Prof. Dr. Torbjorn Ackersted	Karolinska Institute, Sweden
7	Dr. Ries Simons	TNO, The Netherlands
8	Dr. Philipp Cabon	University of Paris Descartes, France
9	Prof. Dr. Régis Mollard	University of Paris Descartes, France
10	Prof. Dr. Simon Folkard	Swansea University, UK

- ECASS scientists have studied >4000 pilots during various rosters and operational conditions.
- Data of 41 studies of ECASS/NASA-Ames/Massey University have been used to answer the questions.

Discussions will continue, because . . . . .

- Scientific data provide 'hard' evidence that alertness and performance impair due to fatigue and circadian factors
- Science can calculate the increase of risk due to FTL issues

However . . . .

Scientific field studies can never provide 100% 'hard' evidence that accidents will occur below a certain alertness level

Society has to decide about what risk level is acceptable

ECASS - General Conclusion

- There is a problem faced by all FTL schemes that set prescriptive limits across a comprehensive range of issues.
- Within the FTL regulations it may be possible to construct schedules where a combination of factors gives rise to an unacceptable schedule.
- Yet at the same time, perfectly acceptable schedules may be prohibited.

Recommendation

Implement a Fatigue Risk Management System (FRMS) to better match operational needs and fatigue-related flight safety considerations.

FRMS is a scientifically-based, data driven flexible alternative to prescriptive FTL limitations that forms part of an operator's Safety Management System and involves a continuous process of monitoring and managing fatigue.

- Implementation of an FRMS by recommended by ICAO
- EASA is developing a proposal for implementation of an FRMS

An FRMS can be used within the envelope of prescriptive flight and duty time limitations or as an alternative to such prescriptive rules that provides at least an equivalent level of safety.

Proactively and continuously manage fatigue risk through a process requiring shared responsibility amongst management and crew members.

Since crew feedback and non-punitive reporting are essential elements of an FRMS, a “just culture” is integral to any FRMS programme”

An FRMS should include the following essential components:

- a fatigue risk management policy;
- education and awareness training programmes;
- a crew fatigue reporting mechanism with associated feedback;
- procedures and measures for monitoring fatigue levels;
- procedures for reporting, investigating, and recording incidents that are attributable wholly or in part to fatigue;
- processes for evaluating information on fatigue levels and fatigue-related incidents, undertaking interventions, and evaluating the effects of those interventions.

The Operators' Role

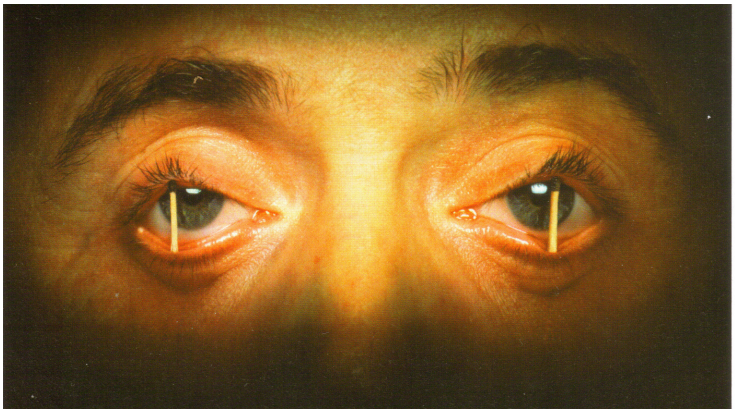
- Management of Roster planning to achieve sustainable duty patterns (using a predictive model)
- Provide training and guidance on fatigue countermeasures
- Identify and manage potential fatigue risks

The Crew Members' Role

- Ensure effective use is made of planned rest periods
- Proper accounting of secondary employment
- Duration and timing of travelling is commensurate with planned duty
- Notify Operator of lack of fitness to operate

The Regulator's Role

- Ensure that safety levels provided under an FRMS are at least equivalent to those provided under prescriptive fatigue management regulations before approving operator proposals for introduction of FRMS
- Provide legislative framework allowing effective control of fatigue risk
- Approve and monitor Operators' systems for management of their fatigue risk profile
- Provide best practice guidance on Alertness Management techniques



ries.simons@tno.nl